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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/040,057	10/26/2001	Graham W. Flint	4680.P002A	9382

22833 7590 03/30/2004

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EXAMINER

HSIA, SHERRIE Y

ART UNIT	PAPER NUMBER
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2614

DATE MAILED: 03/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/040,057

Applicant(s)

FLINT, GRAHAM W.

Examiner

Sherrie Hsia

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

On page 9, line 6, "16" should be deleted.

Appropriate correction is required.
2. The lengthy specification has not been fully checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

3. Claims 3, 4, 7-9, 14, 15, 21, 22, 24 and 28 are objected to because of the following informalities:

In claims 3 and 7, line 3, "said first laser pulses" should be --said laser pulses--.

In claims 4, 8, 14 and 21, line 1, "first" should be deleted.

In claim 7, line 8, before "pulsed", --second-- should be inserted;

line 17, before "pulsed", --third-- should be inserted;

In claim 9, line 10, "said laser driver" should be --a laser driver--;

line 14, before "modulated", "the" should be --a first--.

In claim 15 line 8, and claim 22 line 9, "first," should be --spatial light modulator and--.

In claim 24, line 4, both "pulsed laser source" should be --laser means--.

In claim 28, line 1, "first" should be --pulsed--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

OR

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1, 2, 5, 6, 9, 12, 16, 17, 20 and 23-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Kappel (5704700).

As to claims 1 and 5, Kappel discloses the claimed subject matter, the claimed generating a pulsed laser beam that includes a series of periodic light pulses each having an approximately equal energy content is met by the light source 20 includes a red laser source 22 (Fig. 1, column

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9 line 50-column 10 line 8, column 15 lines 5-45) and the claimed modulating the pulsed laser beam in an element of a spatial light modulator to gate a number of pulses is met by the spatial light modulator 40 (Fig. 1, column 10 lines 9-59) (also see Figs. 2-6 and accompanying text).

As to claims 2 and 6, the claimed projecting the modulated beam onto a screen is met by the projection lens system 60 (Fig. 1, column 9 lines 32-37, column 10 lines 45-47).

As to claim 9, Kappel discloses the claimed subject matter, the claimed pulsed laser source that provides a laser beam including a series of periodic light pulses is met by the light source 20 includes a red laser source 22 (Fig. 1, column 9 line 50-column 10 line 8, column 15 lines 5-45), the claimed spatial light modulator that receives said laser pulses from said pulsed laser source, said modulator including a plurality of elements each of which is configured in one of a first state, a second state, and a transition between said first state and said second state, said transition having an associated transition interval is met by the spatial light modulator 40 (Fig. 1, column 10 lines 9-59), a the claimed modulation driver synchronized with the laser driver is met by the computer 13 (column 9 line 52-column 10 line 8, column 10 lines 41-47) and the claimed optical system is met by the projection lens system 60 (Fig. 1, column 9 lines 32-37, column 10 lines 45-47) (also see Figs. 2-6 and accompanying text).

As to claim 12, the claimed DMD array is met by the DMD 624 (Fig. 6, column 13 lines 49-50).

As to claim 16, the claimed projection system including a screen is met by the projection lens system 60 and the remote surface 19 (Fig.1).

As to claim 17, Kappel discloses the claimed subject matter, the claimed pulsed laser source is met by the light source 20 includes a red laser source 22 (Fig. 1, column 9 line 50-

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column 10 line 8, column 15 lines 5-45), the claimed image processor is met by the computer 13 and CRT 46 (Fig. 1), the claimed modulator driver coupled to the image processor is met by the computer 13 (column 9 line 52-column 10 line 8, column 10 lines 41-47), the claimed spatial light modulator array coupled to the modulator driver is met by the spatial light modulator 40 (Fig. 1, column 10 lines 9-59), and the claimed projection system is met by the projection lens system 60 (Fig. 1, column 9 lines 32-37, column 10 lines 45-47) (also see Figs. 2-6 and accompanying text).

As to claim 20, the claimed DMD array is met by the DMD 624 (Fig. 6, column 13 lines 49-50).

As to claim 23, Kappel discloses the claimed subject matter, the claimed laser means is met by the light source 20 includes a red laser source 22 (Fig. 1, column 9 line 50-column 10 line 8, column 15 lines 5-45), the claimed means for modulating the pulsed laser beam is met by the spatial light modulator 40 (Fig. 1, column 10 lines 9-59), the claimed means for synchronizing a transition of the elements with the laser pulses is met by the computer 13 (column 9 line 52-column 10 line 8, column 10 lines 41-47), and the claimed means for projecting the modulated beam is met by the projection lens system 60 (Fig. 1, column 9 lines 32-37, column 10 lines 45-47) (also see Figs. 2-6 and accompanying text).

As to claim 24, the claimed image processor is met by the computer 13 and CRT 46 (Fig. 1) and the claimed modulator driver is met by the computer 13 (Fig. 1).

As to claim 25, the claimed projection optics is met by the projection lens system 60 (Fig. 1).

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As to claim 26, the claimed DMD array is met by the DMD 624 (Fig. 6, column 13 lines 49-50).

5. Claims 1-8 are rejected under 35 U.S.C. 102(e) as being anticipated by Karakawa (6483556).

As to claims 1 and 5, Karakawa discloses the claimed subject matter, the claimed generating a pulsed laser beam that includes a series of periodic light pulses each having an approximately equal energy content is met by the red laser source 10 (Fig. 1, column 7 lines 7-10) and the claimed modulating the pulsed laser beam in an element of a spatial light modulator to gate a number of pulses is met by the modulator 20 (Fig. 1, column 7 lines 12-15) (also see Figs. 2-5 and accompanying text).

As to claims 2 and 6, the claimed projecting the modulated beam onto a screen is met by the image delivery design 28 with a set of projection optics 34 (Fig. 1, column 7 lines 48-53).

As to claims 3, 4, 7 and 8, the claimed generating a second pulsed laser beam that includes a series of periodic light pulses having the second color each having an approximately equal energy content is met by the green laser source 12 (Fig. 1, column 7 lines 7-10), the claimed modulating the second pulsed laser beam in an element of a spatial light modulator to gate a number of pulses is met by the modulator 20 for green color (Fig. 1, column 7 lines 12-15), the claimed generating a third pulsed laser beam that includes a series of periodic light pulses having the third color each having an approximately equal energy content is met by the blue laser source 10 (Fig. 1, column 7 lines 7-10) and the claimed modulating the third pulsed laser beam in an element of a spatial light modulator to gate a number of pulses is met by the

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modulator 20 for the blue color (Fig. 1, column 7 lines 12-15) and the claimed combining the red, green and blue modulated beams to provide a full color modulated beam is met by the R, G, B formation optics 22 (column 7 lines 15-17, 46-47) (also see Figs. 2-5 and accompanying text).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3, 4, 7, 8, 10, 11, 13-15, 18, 19, 21, 22, 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kappel.

As to claims 10 and 18, Kappel does not show the Q-switched laser. However, Kappel teaches that other laser sources could be used to achieve satisfactory results. The examiner takes Official Notice that Q-switched laser is well known and widely used in the projection art to generate laser light beam, and therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use Q-switched laser in order to achieve satisfactory results.

As to claims 11 and 19, Kappel does not show the mode-locked laser and optical switch. However, Kappel teaches that other laser sources could be used to achieve satisfactory results. The examiner takes Official Notice that mode-locked laser and optical switch are well known and widely used in the projection art to generate laser light beam, and therefore it would have

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been obvious to one of ordinary skill in the art at the time the invention was made to use mode-locked laser and optical switch in order to achieve satisfactory results.

As to claims 3, 4, 7, 8, 13, 14, 21, 27 and 28, Kappel shows three laser sources, but does not show three modulators for three colors and a beam combiner. The examiner takes Official Notice that using three modulators and beam combiner for modulating three color laser beam is well known in the projection art to generate a full color image, and therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use three modulators for three colors and beam combiner in order to combine separate R, G, B images to form a full color image.

As to claims 15 and 22, Kappel does not show the laser source with three laser beams and three modulators for three laser beams. The examiner takes Official Notice that the laser source with three color laser beams and three modulators for three color laser beams are well known and widely used in the projection art to generate laser light beams and modulate the color beams, and therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use such well known laser source and modulators in order to provide an economic, simplified and compact system.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Lee (6426781) discloses a laser video projector having a light source and light modulators.

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Mazda (6636274) shows an image display device having light sources and liquid crystal panels.

Lewis (2004/0037462) discloses a pattern recognition having laser and SLM.

Freeman (5624437) shows a high resolution, high speed, programmable laser beam modulating apparatus having a laser and a micromirror array.

Maiman (4084182) shows a multi-beam modulator having a laser and a modulator.

Ernstoff discloses a full color sequential image projection system having a laser source and DMD.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sherrie Hsia whose telephone number is (703) 305-4738.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Miller can be reached on (703) 305-4795.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231


Or faxed to:

(703) 872-9306 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 308-HELP.



Sherrie Hsia
Primary Examiner
Art Unit 2614

SH
March 22, 2004